Alaska Fisheries Science Center
Resource Ecology & Fisheries Management
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August 19, 2003

Cruise Report
F/V *Pacific Explorer* Cruise 200301
July 12 - July 26, 2003

Project Title: Atka mackerel tag and release Amchitka Island area, Aleutian Islands Alaska

SCIENTIFIC PURPOSE

The objective of our on-going tag release-recovery studies is to determine the efficacy of trawl exclusion zones as a management tool to maintain prey abundance/availability for Steller sea lions at local scales. Trawl exclusion zones were established around sea lion rookeries as a precautionary measure to protect critical sea lion habitat, including local populations of prey such as Atka mackerel. Localized fishing may affect Atka mackerel abundance and distribution near sea lion rookeries. Tagging experiments are being used to estimate abundance and movement between areas open and closed to the Atka mackerel fishery. A feasibility study was conducted in 1999 at Seguam Pass. In the years 2000 to 2002 approximately 30,000 tags were released in the Seguam pass area (With 30,000 released in 2002) and in 2002 approximately 15,000 tags were released in the Tanaga Pass area. Recovery of tagged fish is supplied by the fishery in the open areas outside the trawl exclusion zone. Recoveries in the closed areas are provided by chartered recovery cruises. The purpose of F/V Pacific Explorer Cruise 200301 was to tag and release Atka mackerel inside and outside the trawl exclusion zones near Amchitka Island (Figure 1). Approximately 15,000 fish were tagged and released during this cruise in the Amchitka Island area.

ITINERARY AND ACTIVITIES

July	10-11	Dutch Harbor, AK; load gear, set up tanks
	12-14	In transit to Amchitka Island area
	14	Amchitka Island, tagging in stratum 1, 2 (see Figure 1)
	15	Amchitka Island, tagging in stratum 1
	16	Amchitka Island, tagging in stratum 2, 5
	17	Amchitka Island, tagging in stratum 3
	18	Amchitka Island, tagging in stratum 3, 4
	19	Amchitka Island, tagging in stratum 4
	20	Amchitka Island, tagging in stratum 4
	21	Amchitka Island, tagging in stratum 2
	22	Amchitka Island, tagging in stratum 2
	23-25	In transit to Dutch Harbor, clean tanks, nets and gear
	26	Dutch Harbor, AK, unload tanks, nets and gear

RESULTS

Tagged Atka mackerel. Table 1 shows the number of Atka mackerel tagged and released in each stratum in the Amchitka Island area. Strata locations are shown in Figure 1.

Table 1. Distribution of tagged fish in Seguam Pass

Strata	Approx. # of tagged Atka mackerel
1	3,000
2	4,500
3	3,000
4	4,000
5	600
Total	15,100

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Biological samples Otoliths, gonads and stomachs were collected from 5 males and 5 females from every successful haul. Samples were taken from a total of 200 fish.

Length frequency In order to examine any bias in the length selection of the tagged fish, it is necessary to obtain length frequencies from the total catch. Approximately 100 fish (not tagged) were sacrificed from each successful haul to determine sex and length.

Maturity The gonads of fish collected for length frequency data were visually inspected and categorized into maturity stages. Approximately 1500 fish were recorded as one of six stages of females or four stages of males.

Mortality study For each successful haul 10 randomly selected fish were placed into tanks to assess mortality rate following capture, handling and tagging. Experiments were conducted where fish were kept for at least 48 hours. Nine experiments were conducted over the course of the cruise. Of the126 fish participating in the experiments, a total of 1died, for a mortality rate of .08%.

Physical oceanographic measurements Continuous temperature and salinity data were collected with a Seabird SBE45 plumbed to receive water from the same source as the tanks. Fluorescence was measured continuously with a Turner Designs SCUFA fluorometer, plumbed to receive water from the same source as the tanks. Temperature-depth data were also collected with a MBT mounted on the net.

Underwater camerawork A drop camera was deployed off a 16 foot zodiak and from the vessel to examine Atka mackerel spawning grounds nearshore and in shallow reef areas around the Island passes. The camera was deployed mostly in depths ranging from 5-50 fathoms in the Vicinity of Amchitka, Seguam, Amlia, and Umnak Island and their corresponding passes. Spawning Atka mackerel were found in high current areas in depths from 15 to 50 fathoms. Video footage and corresponding GPS locations of fish were recorded.

Special projects A number of additional specimens were collected at the request of other NOAA scientists. Fin clips from 200 Atka mackerel and from 50 Pacific cod were collected for genetic analysis. Full stomachs from 9 Atka mackerel were collected for a study of the feasibility of extracting the DNA of the prey items within. Skate specimens (one male and one female) of a variety of species were collected for taxonomic study. Whole Atka mackerel, walleye pollock and Pacific cod (10 males and 10 females) were frozen for proximate analysis of lipid, protein, water and ash content. A number of Atka mackerel, rockfish and flatfish (10 to 20) were collected to be used as specimens for Observer Program training.

SCIENTIFIC STAFF

Leg I

Name	Sex/Natl.	Position
1. Susanne McDermott	F/USA	Field Party Chief
2. Kimberly Rand	F/USA	Deck Boss
3. Libby Logerwell	F/USA	Scientist
4. Bob Lauth	M/USA	Scientist
5. Ivonne Ortiz	F/Mexico	Student /Scientist
6. John Hargrove	M/USA	Student Intern

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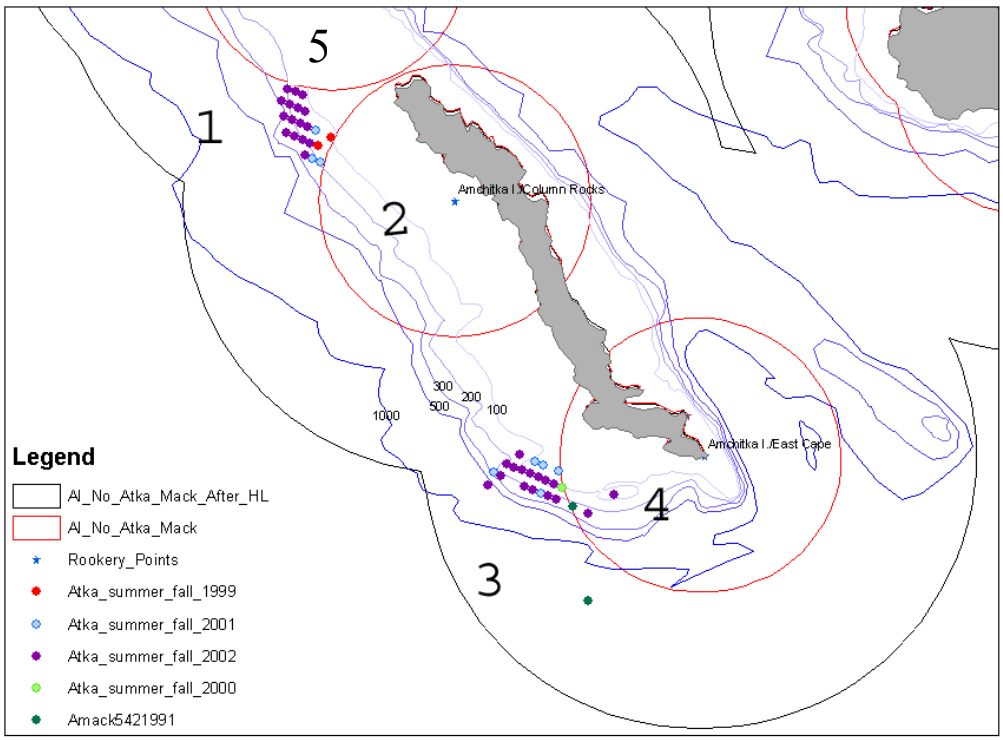

Figure 1. Strata in the Amchitka Island area for the 2003 tag release cruise. Points are the location of tows during the domestic fishery June-September, 1999-2002; and the foreign fishery during 1991.